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Quality Engineering Test Report

SERIES: S-60 **60W AC-DC SINGLE OUTPUT SWITCHING POWER SUPPLY**

SAMPLE:

A.S-60-5	5V / 12A
B.S-60-12	12V / 5A
C.S-60-15	15V / 4A
D.S-60-24	24V / 2.5A

NO	TEST ITEM	TEST CONDITION / SPECIFICATION	RESULT	VERDICT
1	AC INPUT VOLTAGE RANGE	I/P : TESTING SPEC : 85~264VAC O/P : FULL LOAD	A:57.7VAC~267VAC	P
2	LINE REGULATION	I/P : 85~264VAC SPEC : O/P : FULL LOAD A: ±0.5% B: ±0.5% C: ±0.5% D: ±0.5%	A: 0% ~ 0% B: 0% ~ 0% C: -0.04% ~ 0% D: 0% ~ 0%	P
3	LOAD REGULATION	I/P : 230VAC SPEC : O/P : MIN. TO FULL LOAD A: ±1% B: ±0.5% C: ±0.5% D: ±0.2%	A: -0.24% ~ +0.12% B: -0.05% ~ +0.05% C: -0.04% ~ +0.04% D: 0% ~ +0.02%	P
4	OUTPUT VOLTAGE TOLERANCE	I/P : 85~264VAC SPEC : O/P : 20% TO FULL LOAD A: ±2% B: ±1% C: ±1% D: ±1%	A: -0.5% ~ 0% B: -0.1% ~ +0.7% C: -0.09% ~ +0.04% D: -0.03% ~ -0.07%	P
5	RIPPLE&NOISE	I/P : 230VAC SPEC : O/P : FULL LOAD A: 120mV B: 120mV C: 150mV D: 150mV	A: 45mV B: 8mV C: 9mV D: 11mV	P
6	AC INPUT CURRENT	I/P : 230VAC SPEC : 1A O/P : FULL LOAD	A:0.757A	P
7	MAX. INRUSH CURREN	I/P : 230VAC SPEC : 60A O/P : FULL LOAD	A:34.47A	P
8	O/P VOLTAGE ADJ.RANGE	I/P : 230VAC SPEC : O/P : MIN. LOAD A: -5%~+10% B: -10%~+10% C: -10%~+10% D: -10%~+10%	A: 4.41V~5.75V B: 9.89V~14.5V C: 12.38V~17.37V D: 19.3V~27.21V	P
9	SET UP TIME	I/P : 230VAC SPEC : 300mS O/P : FULL LOAD	A: 255mS	P
10	HOLD UP TIME	I/P : 230VAC SPEC : 80mS O/P : FULL LOAD	A: 107mS	P
11	EFFICIENCY	I/P : 230VAC SPEC : O/P : FULL LOAD A:73% B:76% C:77% D:79%	A:75.29% B:77.75% C:79.25% D:81.3%	P
12	OVER LOAD PROTECTION	I/P : 115VAC SPEC : 105%~150% O/P : TESTING	A:142.5% B:129% C:135% D:137%	P

NEXT

<table>
<tr><th>NO</th><th>TEST ITEM</th><th>TEST CONDITION / SPECIFICATION</th><th>RESULT</th><th>VERDICT</th></tr>
<tr><td>13</td><td>OVER VOLTAGE PROTECTION</td><td>I/P : 230VAC SPEC : 115%~135%
O/P : FULL LOAD</td><td>A : 125%
B : 121%
C : 123%
D : 116.8%</td><td>P</td></tr>
<tr><td>14</td><td>GROUND LEAKAGE CURRENT</td><td>I/P : 240VAC SPEC :
L-FG--<3.5mA
N-FG--<3.5mA</td><td>A: L-FG : 0.99mA
N-FG : 1.02mA</td><td>P</td></tr>
<tr><td>15</td><td>INSULATION RESISTANCE</td><td>SPEC : O/P-FG 500VDC/100M Ohms MIN.
I/P-O/P 500VDC/100M Ohms MIN.
I/P-FG 500VDC/100M Ohms MIN.</td><td>A: O/P-FG >100M Ohms
I/P-O/P >100M Ohms
I/P-FG >100M Ohms</td><td>P</td></tr>
<tr><td>16</td><td>DIELECTRIC / WITHSTAND VOLTAGE</td><td>SPEC : I/P- O/P : 3KVDC/ 1 min. (10mA CUT-OFF)
I/P - FG : 1.5KVDC/ 1 min. (10mA CUT-OFF)
O/P - FG : 0.5KVDC/ 1 min. (10mA CUT-OFF)</td><td>A: I/P-O/P : 0.002mA
I/P-FG : 0.002mA
O/P-FG : 0.002mA</td><td>P</td></tr>
<tr><td rowspan="2">17</td><td rowspan="2">EMS TEST</td><td>EFT TEST:
EN50082-1 IEC1000-4-4</td><td>D: CRITERIA A OK</td><td>P</td></tr>
<tr><td>SURGE TEST:
EN50082-1 IEC1000-4-5</td><td>D: CRITERIA A OK</td><td>P</td></tr>
<tr><td>18</td><td>BURN-IN TEST</td><td>I/P: 230VAC O/P: FULL LOAD
TA:23.7°C BURN-IN DURATION : 1.5 hrs</td><td>A:NON BREAK</td><td>P</td></tr>
<tr><td>19</td><td>ENVIRONMENT TEST (SAMPLE A:)</td><td>HIGH AMBIENT TEMPERATURE FULL LOAD TEST
I/P : 230VAC O/P : FULL LOAD
AMBIENT TEMPERATURE : 39.3°C</td><td>AFTER 21hrs
NON BREAK</td><td>P</td></tr>
<tr><td>20</td><td>TEMPERATURE RISE TEST T rise OF PARTS</td><td colspan="2">A: I/P : 230VAC AFTER 1.5 hr BURN-IN
O/P : FULL LOAD TA : 23.7C
<table>
<tr><th></th><th>POSITION</th><th>P/N</th><th>TEMP</th><th>T rise</th></tr>
<tr><td></td><td>BD1</td><td>BRIDGE DIODE</td><td>70.3°C</td><td>46.6°C</td></tr>
<tr><td></td><td>Q1</td><td>MAIN TRANSISTOR</td><td>76°C</td><td>52.3°C</td></tr>
<tr><td></td><td>T1</td><td>MAIN TRANSFORMER</td><td>75.8°C</td><td>52.1°C</td></tr>
<tr><td></td><td>D4</td><td>O/P DIODE</td><td>75.9°C</td><td>52.2°C</td></tr>
<tr><td></td><td>C21</td><td>O/P FILTER CAPACITOR</td><td>66.8°C</td><td>43.1°C</td></tr>
<tr><td></td><td>C5</td><td>I/P FILTER CAPACITOR</td><td>54°C</td><td>30.3°C</td></tr>
<tr><td></td><td>LF1</td><td>I/P FILTER</td><td>53°C</td><td>29.3°C</td></tr>
<tr><td>*</td><td>D1</td><td>FLY DIODE</td><td>92°C</td><td>68.3°C</td></tr>
</table></td><td>*NOTE1</td></tr>
<tr><td>21</td><td>LIFE CYCLE</td><td colspan="2">A: SUPPOSE C21 IS THE MOST CRITICAL COMPONENT
I/P : 230VAC O/P : FULL LOAD Ta : 25 °C Tc21 : 66.6°C Life: 64085hrs
I/P : 230VAC O/P : FULL LOAD Ta : 45 °C Tc21 : 85.7°C Life: 17052hrs</td><td>P</td></tr>
<tr><td>22</td><td>CRITICAL COMPONENT RECORD (FOR QC INSPECTION REFERENCE ONLY)</td><td colspan="3">A: FUSE :3A/250V
BRIDGE DIODE :D3SB60
LINE FILTER :TF096C1
TRANSFOMER TF158-1-R1
POWER SWITCHER :2SK2625 TO-3P
OUTPUT DIODE :S30SC4M
OUTPUT CAPACITOR :ELNA 2200uF/16V RJH 105°C
INPUT CAPACITOR :JAMICON 150uF/400V LP 85 °C
P.C.B :S-60N-R4 CEM-1 2 OZ SS</td></tr>
<tr><th>DATE</th><th>SAMPLE</th><th>TEST RESULT</th><th>TEST</th><th>APPROVAL</th></tr>
<tr><td>19980423</td><td>S-60</td><td>NOTE1:WORKING TEMPERATURE > = 43 °C OUTPUT SHOULD DERATING</td><td>H.C.LIOU</td><td>MAX LIN</td></tr>
<tr><td>19990518</td><td>S-60-24</td><td>PASS</td><td>H.C.LIOU</td><td>MAX LIN</td></tr>
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